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ABSTRACT

Course syllabi are provided for the pharmacology course sequence in the associate degree nursing program at Chattanooga State Technical Community College. Pharmacology I introduces students to basic information related to pharmaceutical preparation, presenting standards and legislation pertaining to the administration of medication. Pharmacology II introduces information related to preoperative, intraoperative, and postoperative medications administered to patients requiring surgical intervention. Pharmacology III considers major classifications of drugs. The syllabi for these courses present information on class, laboratory, and credit hours; prerequisites; textbooks; week-by-week course content; course competencies; and evaluation criteria. The bulk of each syllabus presents the competencies students are to acquire in each unit. Appended material includes formulas for pharmaceutical calculations; an independent study project, information on common drugs, their trade and generic names, dosage, and use; a math practice quiz with answers; and information on drug efficacy. (EJV)

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PHARMACOLOGY I, II, III (NS 111, NS 121, NS 211): COMPETENCY-BASED COURSE SYLLABI

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COURSE SYLLABUS
Pharmacology I - NS 111

CLASS HOURS: 1 CREDIT HOURS: 1
LABORATORY HOURS: none

CATALOG COURSE DESCRIPTION

This course will introduce students to basic information related to pharmaceutical preparations. Standards and legislation pertaining to administration of medications will be presented. Accurate calculation of drug dosages will be required.

ENTRY LEVEL STANDARDS:

PREREQUISITE AND/OR CO-REQUISITE
Co-requisite: NS 117

TEXTBOOK(S) AND OTHER REFERENCE MATERIAL BASIC TO THE COURSE:

1. PHARMACOLOGY IN NURSING; Hahn, Berkin, Oestrich; 15th Edition; 1982; C. V. Mosby Company.
2. THE ARITHMETIC OF DOSAGES AND SOLUTIONS; Laura K. Hart; 5th Edition; 1981; C. V. Mosby Company.
3. DRUGS AND NURSING IMPLICATIONS; Govoni and Hayes; 4th Edition; 1982.

WEEK/UNIT/TOPIC BASIS:
A systematic and orderly list of activities and/or events that will comprise the total alloted time for the course. The activities, whether based on weeks, units or topics, should correspond to the number of weeks in the quarter.

I. COURSE CONTENT

Week	Unit	Topic
1 9/19	I	Introductory Aspects of Pharmacology A) Naming of Drugs B) Drug Information Sources
2,3 9/26 10/03	I	C) Dynamics of Drug Actions and Interactions
3,4 10/03 10/10	I	D) Dosage Forms and Routes of Administration
5 10/17		EXAMINATION: UNIT I - A, B, C, AND D
6 10/24	I	E) Weights and Measures Required for Drug Administration
7 10/31	I	F) Formulas for Determining Dosages and Solutions
8 11/07	I	G) Standards and Legislation Related to the Administration of Medications
9		EXAMINATION: CALCULATING DOSAGES & SOLUTIONS Review/Repeat Calculation Examination (Arranged on own)
10		EXAMINATION: COMPREHENSIVE FINAL

II. CENTRAL COMPETENCIES
Upon completion of this course, the student will be able to:

1,2 1) DEFINE terms relevant to the study of pharmacology.
1 2) COMPLETE drug dosage examination with 85% accuracy, allowing one (1) repeat.
1,2,5 3) STATE drug information sources, pharmaceutical preparations, and standards and legislation related to drugs.
1 4) COMPARE action and absorption of drugs with the route of administration.
1,5 5) DESCRIBE actions and interactions of drugs and implications for administration.

III. SPECIFIC EVALUATION PROCESS WHEREBY THE ACHIEVEMENT WILL BE MEASURED:

A. Testing Procedures:

Examinations: 1 unit examination (discussion/objective)
1 math examination (objective)
85% ACCURACY REQUIRED ON MATH EXAMINATION
1 comprehensive final (discussion/objective)

AN ACADEMIC AVERAGE OF 70% ON THE NURSING EXAMINATION IN EACH COURSE IS REQUIRED FOR PROGRESSION.

B. Laboratory Expectations: none

C. Field Work: none

D. Other evaluation methods (off-campus processes, standardized testing, etc.):

Unit Examination = 25%
Math Examination = 50%
Final Examination = 25%
Final Course Grade = 100%

E. Grading Scale:

90% - 100% = A
80% - 89% = B
70% - 79% = C
65% - 69% = D
below 65% = F

LEGEND FOR CURRICULUM CODING

I. Content threads are coded superiorly while Process threads are coded inferiorly.

Content Threads	Process Threads
o Adaptation	▲ Teaching-Learning
▱ Safety	■ Communication
△ Growth and Development	● Nursing
▬ Nutrition	◢ Management
▱ Pharmacology	
✳ Subsystems	
▯ Pathophysiology	

II. Course Competencies are referenced back to program goals as evidenced by numbers in the left margin.

Unit and Weekly Objectives are referenced back to Cumulative Course Competencies as evidenced by numbers in the left margin.

NS 111 - Pharmacology I

UNIT I

Introductory Aspects of Pharmacology

A) Naming of Drugs

1 1. Define the following terms:

a. chemical name

b. generic name

c. official name

d. trade name

1,3 2. Explain the advantage of labeling drugs with both their generic and trade names.

1,3 3. Given a list of commonly prescribed drugs, identify each as a generic name, official name, or trade name.

Read: Pharmacology in Nursing - pgs 28-29

Unit I - Continued

B) Drug Information Sources

3	▱ ■	1. Describe the contents and the advantages and disadvantages of the following sources of drug information: a) Physician's Desk Reference (PDR) b) American Hospital Formulary Service c) drug information centers d) pharmaceutical detail persons e) pharmacology texts f) nursing/medical journals g) others
3	▱ ■ ●	2. Utilize various drug information sources when developing a personal drug file.
3,4,5	▱ ●	3. Maintain an up-to-date drug card for each medication administered during any given clinical rotation.

Read: Pharmacology in Nursing - pgs 76-78

DRUG INFORMATION SOURCES

Study Guide

Source	Content (type of info present)	Advantages/Disadvantages (Is it revelant info for nursing?)	Additional Comments

DRUG INFORMATION SOURCES

Study Guide

Source	Content (type of info present)	Advantages/Disadvantages (Is it revelant info for nursing?)	Additional Comments

Unit I - Continued

C) Dynamics of Drug Actions and Interactions

1 1. Define the following terms as they apply to pharmacotherapy:

a) pharmaceutical phase
b) pharmacokinetics phase
c) pharmacodynamic phase

5 2. List the four pharmacokinetic processes.

5 3. Describe how the following factors may influence drug absorption:

a) route of administration
b) drug solubility
c) pH
d) local conditions at the site of administration
e) drug concentration

5 4. Describe factors affecting drug distribution.

5 5. State the purposes of biotransformation.

5 6. List the pathways and biological subsystems involved in drug excretion.

5 7. Describe the three mechanisms by which drugs are excreted through the kidneys.

1 8. Define the term biologic half-life.

5 9. Explain briefly the following theories of drug actions:

a) Receptor theory
b) Enzyme systems
c) Physiochemical properties

4,5 10. Examine underlying factors that account for the variability with which individual patients respond to certain drug dosages.

5 11. Explain the mechanisms whereby drug interactions occur during the absorption, distribution, biotransformation and excretion of a drug.

1,5 12. Define the term adverse drug reactions, giving examples.

Read: Pharmacology in Nursing - Chapter 4, pgs 71-76.

Unit I - Continued

D) Dosage Forms and Routes of Administration

3,4 1. List the advantages and disadvantages of each of the following drug routes and forms:

a) solid oral (capsule, powder, tablets)
b) liquid oral
c) topical
d) rectal/vaginal
e) ophthalmic
f) otic
g) nasal/inhalant
h) dental-throat
i) parentral (intradermal, intramuscular, intravenous, subcutaneous)

3 2. Recite general nursing strategies required for each method of drug administration.

3 3. List at least eight different types of pharmaceutical preparations.

1,3 4. Memorize commonly used abbreviations employed in prescription orders.

3,4 5. Describe the following routes of administration in relation to onset of action and factors affecting absorption:

a) intravenous
b) intramuscular
c) subcutaneous
d) across skin
e) inhalation
f) oral

Read: Pharmacology in Nursing - pgs 31-37; 84; 95-108.

Unit I - Continued

E) Weights and Measures Required for Drug Administration

2 1. List the three systems of measurement currently utilized for drug administration.

1,2 2. Identify abbreviations and symbols employed by these systems of measurement.

2 3. Demonstrate an understanding of the Apothecaries' system by changing from one measure to another in that system.

2 4. Demonstrate an understanding of the metric system by changing from one measure to another in that system.

2 5. Demonstrate an understanding of Metric-Apothecaries' equivalents by changing:

a) grams to grains
b) grains to grams
c) grains to milligrams
d) milligrams to grains
e) milligrams to grams
f) grams to milligrams

2 6. List common household measures.

2 7. Identify equivalents for the systems of Apothecaries', Metric and household measures.

Read: The Arithmetic of Dosages and Solutions - pgs 3-17; 30-59

Pharmacology in Nursing - pgs 90-92

Unit I - Continued

F) Formulas for Determining Dosages and Solutions

2 1. Recall concepts of basic arithmetic to solve problems using fractions, decimal fractions, percentage ratio, and proportion.

2 2. Apply these concepts to the preparation of medications and solutions.

2 3. Compute the following:

a) Dosages for oral medications
b) Dosages for parenteral medications
c) Dosages for insulin
d) Dosages of drugs in powder form
e) Dosages for injection using tablets
f) Solutions from pure drugs
g) Weaker solution from a stronger solution
i) Solutions from tablets

Read: Pharmacology in Nursing - pgs 92-95

The Arithmetic of Dosages and Solutions - pgs 1-3; 18-29; 60-66

Unit I - Continued

G) Standards and Legislation Related to the Administration of Medication

3 1. Explain the need for drug standards.

3 2. State the purposes of the following federal regulations:

a) Food and Drug Act of 1906
b) Food, Drug, and Cosmetic Act of 1938
c) Durham-Humphrey Amendment of 1952
d) Kefauver-Harris Amendment of 1962
e) Harrison Narcotic Act of 1914
f) Controlled Substance Act

3 3. Describe the functions of the following federal agencies:

a) Food and Drug Administration
b) Drug Enforcement Administration
c) Public Health Service

3 4. Explain the function of the International Narcotic Control Board.

3 • 5. State the implications of the following for the nurse's role in drug therapy:

a) Institutional policies and procedures
b) Food,Drug and Cosmetic Act
c) Nurse Practice Act
d) Controlled Substance Act

3 • 6. Recite examples of controlled substances, labeling each according to its potential for abuse.

3 • 7. State what the Tennessee Nurse Practice Act defines as legally acceptable practices for the RN in the area of drug administration.

Read: Pharmacology in Nursing - Chap. 2

COURSE SYLLABUS
Pharmacology II
NS 121

Class Hours: 1 Credit Hours: 1
Laboratory Hours: none

Course Description:

This course will introduce students to information related to preoperative, intraoperative, and postoperative medications commonly administered to patients with health deviations requiring surgical intervention. Information essential for the safe administration of intravenous medications and care of the patient receiving parenteral nutrition is included.

Prerequisite: NS 111
Coorequisite: NS 127

Textbook(s): Pharmacology in Nursing; Hahn, Berkin, Oestrich; 15th Ed.; 1982; C. V. Mosby.

The Arithmetic of Dosages and Solutions; Laura K. Hart; 5th Ed.; 1981; C. V. Mosby.

Drugs and Nursing Implications; Govoni and Hayes; 4th Ed.; Appleton-Century Crofts.

I. Course Content

Week/Unit/Topic

1,2,3,4, January 07 14 21 28	Unit II	Administration of Medications Utilized during the Operative Cycle: A) Preoperative Medications B) Intraoperative Medications C) Postoperative Medications
5 February 04		EXAMINATION: UNIT II - A,B, and C
6,7,8,9 February 11 18 25 March 04	Unit III	Strategies Utilized for the Safe Administration of IV Medications: A) Bolus, intermittent and continuous infusion B) Parenteral Nutrition
10 March 11		EXAMINATION: COMPREHENSIVE FINAL

II. Course Competencies

Upon completion of this course, the student will be able to:

6) Describe preoperative, intraoperative, and postoperative medications including their effects on the patient and related nursing strategies.

7) Identify factors essential for the safe administration of intravenous medications given by bolus, intermittent infusion, or continuous infusion.

8) Describe the role of parenteral nutrition in maintaining, promoting, or restoring nutritional status including the role of the nurse in the care of the patient receiving this mode of therapy.

III. Evaluation Criteria:

A. Examinations: 2 unit examinations (objective/discussion)

AN ACADEMIC AVERAGE OF 70% ON THE NURSING EXAMINATIONS IN EACH COURSE IS REQUIRED FOR PROGRESSION.

B. Clinical Laboratory: none

C. Field Work: none

D. Unit II Examination 50%
Comprehensive Final 50%
100%

E. Grading Scale

90& - 100% = A
80% - 89% = B
70% - 79% = C
65% - 69% = D
below 65% = F

NS 121

PHARMACOLOGY II

Unit II Administration of Medications Utilized During the Operative Cycle

A) Preoperative Medications

1. State the purpose of preoperative medications.

2. List at least three (3) preanesthetic agents by their drug classification, generic and trade names, and describe the agent's desirable effects.

3. Describe general nursing strategies for use with the patient receiving a preanesthetic agent.

4. Explain why atropine is often given as a preoperative medication.

5. List the major effects of atropine on the following organ systems:

   a) salivary glands
   b) gastrointestinal tract
   c) heart
   d) CNS
   e) eye

6. List parameters for assessing/evaluating patients who have received a neuromuscular blocker preoperatively.

Read: Pharmacology in Nursing, pg. 252; 276-285; 418-421.

3) Intraoperative Medications

1. Define and be able to differentiate between the following terms:

   a) general anesthesia
   b) local anesthesia
   c) anesthetic
   d) analgesic
   e) amnesia
   f) balanced anesthesia
   g) neuroleptanesthesia

2. State four (4) purposes for administering an anesthetic agent.

3. List the stages and planes of anesthesia and describe their physiological and behavioral manifestations.

4. List the two major categories of general anesthetics, giving examples from each category.

5. Describe the four systems for administration of anesthetics by inhalation.

6. For each of the following groups of general anesthetic agents--gaseous, nonhalogenated volatile liquid, halogenated volatile liquid, and intravenous--state the definition, two examples, mechanism of action, advantages/disadvantages, adverse reactions, and nursing implications.

7. Explain three (3) methods for achieving local anesthesia.

8. State the adverse effects of local anesthetics.

9. Recite an example of a short, intermediate, and long acting local anesthetic, giving preparation and dosage limits and toxic effects.

10. Design nursing strategies to utilize with the patient who has received either a general or local anesthetic.

Read: Pharmacology in Nursing Chapter 9.

C) Postoperative Medications

1. List common postoperative complications that may occur and their possible causative effects.

2. Design nursing strategies to utilize in the care of these common postoperative complications.

3. Explain why the following classifications of drugs may be administered postoperatively:

   a) antiemetic
   b) anticholinergic
   c) narcotic antagonists

4. Explain why phenothiazines should be used with caution to treat postoperative vomiting.

5. List parameters for assessing/evaluating patients post operatively who have received a neuromuscular blocking agent.

Read: Pharmacology in Nursing, pg. 252254.

Unit III Strategies Utilized for the Safe Administration of Medications

A) Bolus, intermittent and continuous infusion

1. Recall strategies designed for initiating, maintaining, and terminating intravenous therapy.

2. List general precautions for adding medications to an IV line.

3. Compare and contrast five (5) methods of administering an IV drug:

   a) into the infusing solution
   b) into a secondary container piggybacked to main IV line
   c) into a chamber (volume control unit)
   d) into a medicinal entry or flash-ball site
   e) intermittent infusion

4. List observations which should be made when caring for a patient receiving the following drugs intravenously

   a) norepinephrine
   b) parenteral hypertensive drugs
   c) antiarrhythmics (lidocaine)
   d) antimicrobials
   e) anticonvulsants
   f) oxytocins
   g) chemotherapeutic agents

5. Compare the advantages and disadvantages of intermittent and of continuous heparin infusion.

6. Explain why a bolus of heparin must be given to initiate therapy by infusion in thromboembolic disease regardless of the type of infusion (continuous or intermittent).

7. Distinguish between "sterile water for injection" and "bacteriostatic water" and their implications for intra venous medications.

8. State the steps to follow when administering a drug IV push.

9. Given a list of commonly prescribed antibiotics, list IV solutions and other drugs which are incompatible.

10. Explain why in-line filters are used on IV equipment and list drugs which are not recommended for use with these filters.

Read: Pharmacology in Nursing, pgs. 105-108, 216-217, 431-432; 645-647; 723-725; 817; 889-891; 894-895.

B) Parenteral Nutrition

1. State the purposes of parenteral nutrition.

2. List clinical indicators for this form of nutritional therapy.

3. Compare and contrast the three (3) types of parenteral nutrition.

4. Explain the advantages of parenteral fat emulsions in parenteral hyperalimentation.

5. Design strategies to alleviate the following complications of parenteral nutrition:

   a) complications arising from infection and sepsis
   b) complications that are metabolic in origin
   c) complications arising from subclavian catherization

Read: Pharmacology in Nursing, pgs. 679-685.

View: Audio-Visuals VT 885 Hyperalimentation: Information Procedures for Nursing
VT 804 Total Parenteral Nutrition: An Overview

CHATTANOOGA STATE TECHNICAL COMMUNITY COLLEGE
Chattanooga, Tennessee
Nursing Division
NS 121

INJECTABLE LOCAL ANESTHETICS

	Short	Intermediate	Long
Preparation:			
Dosage:			
Toxic Effects:			

COURSE SYLLABUS
Pharmacology III
NS 211

Class Hours: 1 Credit Hours: 1
Laboratory Hours: None

Course Description:

This course will introduce students to major classifications of drugs. Knowledge obtained in this course will be utilized and expanded upon during the study of specific health deviations. Students briefly review formulas for determining dosages and solutions and must pass a drug and solution calculation examination with 95% accuracy.

Prerequisite: NS 121
Corequisite: NS 217

Textbook(s): Pharmacology in Nursing: Hahn, Berkin, Oestrich; 15th Ed.; 1982; C. V. Mosby.

The Arithmetic of Dosages and Solutions; Laura K. Hart; 5th Ed.; 1981; C. V. Mosby.

Drugs and Nursing Implications; Govoni and Hayes; 4th Ed.; Appleton Century Crofts.

I. Course Content

Week/Unit/Topic		
1		Review: Formulas for Determining Dosages and Solutions
2		EXAMINATION: CALCULATING DOSAGES AND SOLUTIONS
3, 4	Unit III	Effects of Drugs on Biological Subsystems and Associated Nursing Strategies A) Musculo-Skeletal Subsystem: Relaxants/Antagonists B) Urinary Subsystem: Diuretics, Urinary Tract Agents C) Gastrointestinal Subsystem Agents
5		Effects of Drugs on Biological Subsystems and Associated Nursing Strategies D) Respiratory Subsystem/ Antihistamines

I. Course Content - continued

Week/Unit/Topic		
6		EXAMINATION: UNIT III - A,B,C,D
7,8	Unit III	Effects of Drugs on Biological Subsystems and Associated Nursing Strategies E) Neurological Subsystem: CNS, ANS Agents
9,10	Unit III	Effects of Drugs on Biological Subsystems and Associated Nursing Strategies F) Cardiovascular Subsystem
11		Effects of Drugs on Biological Subsystems and Associated Nursing Strategies G) Antimicrobials and Their Effects on Man as a System
12		EXAMINATION: UNIT III - E,F,G

II. Course Competencies

1,5	9. Complete drug dosage examination with 95% accuracy, allowing one (1) repeat.
1,2	10. List specific classifications of drugs, explaining their effects on the biological subsystems of man.
1,2	11. Describe common side effects, toxicity indicators, contra-indications, and nursing implications for the above classifications of drugs.
1	12. List pathological conditions requiring the use of these drugs.

III. Evaluation Criteria

A) Examinations: 1 Math
2 Unit (objective/discussion)

AN ACADEMIC AVERAGE OF 70% ON THE NURSING EXAMINATIONS IN EACH COURSE IS REQUIRED FOR PROGRESSION.

B) Clinical Laboratory: None

C) Field Work: None

D) Unit III Examinations:

Math Examination	= 33 1/3%
Unit III Examination - A,B,C,D	= 33 1/3%
Unit III Examination - E,F,G	= 33 1/3%
	100%

E) Grading Scale:

90% - 100% = A
80% - 90% = B
70% - 80% = C
65% - 69% = D
65% or below = F

Unit III Effects of Drugs on Biological Subsystems and Associated Nursing Strategies

A) Musclo-Skeletal Subsystem: Relaxants/Antagonists

1 — 1) Define the following terms:

a) spasm
b) spasticity

12 — 2) List central nervous system diseases in which spasticity may be a prominent neurological sign.

10,11 — 3) Compare and contrast the following types of muscle relaxants:

a) centrally acting skeletal muscle relaxants
b) direct acting skeletal muscle relaxants
c) neuromuscular blocking agents

11 — 4) List examples of the above drugs, describing common side effects, toxicity indicators, and nursing implications.

11 — 5) State safety topics to discuss with a patient receiving a skeletal muscle relaxant.

Read: Pharmacology in Nursing, pgs. 267-285.

Unit III - continued

B) Urinary Subsystem: Diuretics, Urinary Tract Agents

1		1) Define the term diuretic.
12		2) List three pathological conditions requiring the use of diuretics.
10		3) Name three groups of diuretics commonly used to treat hypertension.
10,11	•	4) Compare and contrast the following types of diuretics: a) Thiazide b) Loop c) Potassium-Sparing
11	•	5) Summarize the most common side effects, precautions, and contraindications of diuretic therapy.
11	•	6) Prepare a checklist of nursing strategies to utilize with patients receiving diuretic therapy.
1		7) Define the term urinary antiseptic.
10,11	• ▲	8) Name at least four drugs used primarily for urinary tract infections and patient teaching indicated with these drugs.

Read: Pharmacology in Nursing, Chapter 21; 737-738.

Unit III - continued

C) Gastrointestinal Subsystem Agents

10,11			1) Differentiate between systemic and non-systemic antacids.
10,11			2) Explain why sodium bicarbonate is no longer prescribed by physicians for use as an antacid.
11		•	3) State precautions and contraindications for the use of antacids.
10		•	4) Name and give examples of three types of antiemetic agents.
10,11		•	5) Discuss the efficacy, toxicity, and indications for syrup of ipecac.
1			6) Define the following terms: a) laxative b) cathartic
12		•	7) List clinical conditions for which the use of laxatives/ cathartics may be indicated/contraindicated.
10,11		•	8) List four types of laxatives, giving two examples of each, describing their mechanisms of action and adverse effects.
10,11		•	9) List three types of antidiarrheal agents, giving an example of each, and describe their mechanism of action and adverse effects.

Read: Pharmacology in Nursing, Chapter 16.

Unit III - Continued

D) Respiratory Subsystem: Antihistamines

10		1) Explain histamine release and its effects on H_1 and H_2 receptors.
12		2) List therapeutic uses of antihistamines.
10		3) Describe the mechanism of antihistamines.
10		4) Name three over-the-counter agents containing antihistamines.
11	•	5) Summarize the side effects, precautions, and contraindications to the administration of antihistamines.
10,11	•	6) Compare and contrast Benadryl and one other antihistamine.
11	•	7) Design nursing strategies to utilize with patients receiving antihistamines.
11	•	8) Write teaching plans for patients receiving antihistamines.

Read: Pharmacology in Nursing, Chapter 15.

Unit III - Continued

E) Neurological Subsystem: CNS, ANS Agents

CNS AGENTS

	X	1) Review the anatomy and physiology of the central nervous system.
10	▱	2) Construct a classification list of CNS depressants.
10,11	▱ •	3) Summarize the actions of CNS depressants.
1	▱	4) Define the term analgesic.
10,11	▱ •	5) Describe the mechanism of action of narcotic analgesics.
11	▱ • △	6) List the adverse effects and corresponding implications for nursing care of narcotic analgesics.
10,11	▱ • △	7) Differentiate among meperidine, morphine, and codeine on the basis of indications, pharmacokinetics, and adverse effects.
11	▱ • △	8) List common drug interactions with the narcotic analgesics.
10	▱ •	9) List examples of nonnarcotic and antipyretic analgesics.
1	▱ ■	10) Define the term hypnotic.
10	▱	11) Name the hypnotic drug which appears to offer the fewest disadvantages.
11	▱ • △	12) Summarize the common adverse effects of hypnotics, identifying nursing strategies to minimize them.
10,11	▱ •	13) Discuss the pros and cons of administering hypnotics.
11	▱ • ♟	14) Write a teaching plan for patients receiving a hypnotic.
10,11	▱ •	15) Differentiate between the "short-acting", "ultra-short acting", and "long-acting" barbiturates and give examples of each.
10	▱	16) Construct a classification list of CNS stimulants.
10,11	▱ ♣	17) Describe the pharmacologic effects of caffeine.
10,11	▱ • △	18) Summarize the side effects, toxicity indicators, and contra-indications for the administration of amphetamines.

Read: Pharmacology in Nursing, Chapter 8 pgs. 135-178, 222-230.

Unit III - Continued

E) Neurological Subsystem: CNS, ANS Agents

ANS Agents

1) Recall the effects of sympathetic and parasympathetic nerve impulses on various effectors.

10 2) State the actions of the autonomic drugs.

10 3) Name the group of drugs that compose the classification "autonomic drugs" and their synonymes.

10,11 4) Describe the effects of cholinergic drugs on the biological subsystems of man.

10,11 5) Explain the differences in mechanism of action of direct and indirect cholinergic drugs.

12 6) Identify therapeutic uses for cholinergic agents.

11 7) Summarize the side effects, toxicity indicators, contra-indications, and nursing implications for the administration of cholinergic drugs.

10 8) Describe the mechanism of action of atropine-like drugs.

10 9) List therapeutic uses for cholinergic blocking agents.

10,11 10) Design nursing strategies for patients on cholinergic blockers for minimizing adverse effects on the following subsystems:

a) cardiovascular
b) gastrointestinal
c) genito-urinary
d) the eye
e) the exocrine glands

12 11) List therapeutic uses and side effects of antispasmodics.

10,11 12) State five general effects of adrenergic drugs.

12 13) List the major therapeutic uses of the following:

a) epiraphrine
b) norepinephrine
c) isoproterenol
d) dopamine

Unit III - continued

E) Neurological Subsystem: CNS, ANS Agents

ANS Agents - continued

5,10,11		14) Describe various drug interactions that can occur between catecholamines and other drugs.
10		15) Differentiate between the effects of alpha and beta blockers.
12		16) Identify major therapeutic uses for the following adrenergic receptor blockers. a) ergotamine b) phentolamine c) propranolol d) phenoxybenzamine
11		17) List the major adverse effects of alpha and beta adrenergic blockers.
10,11		18) State parameters of importance in evaluating therapeutic effectiveness and adverse reactions in patients receiving adrenergic blockers.

Read: Pharmacology in Nursing, Chapter 13.

Unit III, continued

F) Cardiovascular Subsystem

1 — 1) Define the following terms having specific meaning for cardiovascular drugs:

a) inotropic
b) chronotropic
c) dromotropic
d) pressor effects

10 — 2) Explain the mechanism of action and clinical effect of the cardiac glycosides on cardiac inotropic state, electrophysiologic properties of the heart and kidney function.

10,11 — 3) Compare the following for the two major cardiac glycosides:

a) elimination pathways
b) onset of action
c) half-life
d) maintenance dose

11 — • 4) State three precautions in the administration of digitalis glycosides.

11 — • 5) Explain two methods of digitalizing patients.

11 — • 6) Summarize the common adverse drug reactions to cardiac glycosides, describing their signs, symptoms, and nursing strategies related to each.

11 — • 7) List factors that predispose to digitalis toxicity.

11 — • 8) Prepare a teaching plan for the patient on cardiac glycosides.

10 — 9) State the mechanism of action of the following drugs:

a) quinidine
b) procainamide
c) lidocaine
d) phenytoin
e) propranolol
f) digoxin

Unit III, continued

F) Cardiovascular Subsystem, continued

11 10) State the cardiovascular and noncardiovascular signs and symptoms of toxicity of quinidine and procainamide.

12 11) List clinical indications for the following antiarrhythmic drugs:

a) quinidine and procainamide
b) lidocaine
c) phenytoin
d) propranolol
e) digoxin
f) disophyramide

10,11 12) Describe the following relative to the use of nitroglycerin, propranolol, and the long-acting nitrates in angina therapy:

a) mechanism of action
b) route of administration
c) metabolism
d) adverse effects
e) teaching considerations
f) efficacy in preventing and treating acute anginal attacks

11 13) Prepare a teaching plan for the patient taking nitroglycerin to treat angina.

10 14) Name three medications which may reduce serum lipid levels.

11 15) Explain the effects, dosage side effects, and nursing implications of lipid-lowering medications.

Read: Pharmacology in Nursing, Chapter 18

10,11 16) List the major groups of antihypertensive drugs, explaining their mechanism of action, side effects, and nursing implications.

10 17) List three drugs used to treat hypertensive crisis and their nursing implications.

Read: Pharmacology in Nursing, Chapter 19.

Unit III, continued

G) Antimicrobals and Their Effects on Man as a System

1		1) Define the following terms: a) bacteriostatic b) bacteriocidal c) antibiotic d) antimicrobial
10		2) Explain four sites of action for antimicrobials.
11	•	3) Identify and describe the three major adverse effects common to all types of antimicrobial drug therapy and nursing strategies for their prevention/treatment.
10		4) Identify the three major principles of antimicrobial therapy.
10,12		5) List major categories of antibacterial drugs, clinical indicators for their use, and an example of each.
11	•	6) Describe the presentation and management of an acute allergic response to penicillin.
10		7) Name at least three examples of aminoglycosides.
10,11		8) State the antimicrobial spectrum and adverse effects of the tetracyclines.
10	•	9) List "special" nursing implications for the administration of tetracyclines.
11	•	10) Describe the nursing implications of the sulfonamides.
10,11	•	11) List at least three drugs used in the prevention and treatment of tuberculosis and their nursing implications.

Read: Pharmacology in Nursing, Chapter 23.

PHARMACEUTICAL CALCULATIONS, LESSON THREE

CALCULATION OF DOSES AND DISPENSING QUANTITIES

ʒi = ONE TEASPOONFUL = 5 ml

ʒii = TWO TEASPOONFULS = 10 ml

ʒss = ONE-HALF TEASPOONFUL = 2.5 ml

℥ss = ONE TABLESPOONFUL = 15 ml

℥i = TWO TABLESPOONFULS = 30 ml

APPROXIMATE EQUIVALENTS

1 Grain (Gr)	= 60 tp 65 mg
2 Gr	= 120 to 130 mg
1½ Gr	= 100 mg
3 Gr	= 180 to 200 mg
5 Gr	= 300 to 325 mg
10 Gr	= 600 to 650 mg
3/4 Gr	= 50 mg
½ Gr	= 30 to 32 mg
¼ Gr	= 15 to 16 mg
1/8 Gr	= 8 mg

EXAMPLES:

If one dose of a drug is 200 mg, how many doses are contained in 10 Gm? (10 Gm = 10,000 mg)

How many 5 ml doses are in a 200 ml bottle of Pen VK Suspension?

PHARMACEUTICAL CALCULATIONS, LESSON FOUR, PERCENTAGE SOLUTIONS.

Percentage means parts per hundred. 50% means 50 parts per hundred total parts. 25% means 25 perts per hundred total parts.

There are three different types of percentage solutions:

WEIGHT IN WEIGHT (W/W) = GRAMS OF SOLUTE IN 100 GRAMS OF SOLUTION

WEIGHT IN VOLUME (W/V) = GRAMS OF SOLUTE IN 100 ml OF SOLUTION

VOLUME IN VOLUME (V/V) = MILLILITERS OF SOLUTE IN 100 ml OF SOLUTION

Percent used without qualification means:

SOLID IN SOLID = W/W (Example: Hydrocortisone Ointment)
SOLID IN LIQUID = W/V (Example: 5% Dextrose injection)
LIQUID IN LIQUID = V/V (Example: Glyrol)

WEIGHT IN VOLUME

Multiply the volume in ml by the percentage (expressed as a decimal fraction) to get grams of solute required.

EXAMPLES

How many grams of dextrose are needed to make 4 000 ml of a 5% solution?

Change 5% to a decimal fraction: 5% ÷ 100 = 0.05

Multiply the decimal fraction by the total volume:

0.05 x 4 000 = 200 Gm (Answer)

How many grams of potassium chloride are needed to make 100 ml of a 10% solution?

10% ÷ 100 = 0.1 0.1 x 100 = 10 Gm (Answer)

What is the percentage strength (W/V) of a solution of urea, if 80 ml contain 12 Gm? (Remember, percentage is parts per hundred)

$$\frac{12\ Gm}{80\ ml} = \frac{X\%}{100\%}$$

$12 \times 100 = 1200$

$80 \times X = 80X$

$80X = 1200$

$X = \frac{1200}{80}$

$X = 15\%$ (answer)

PHARMACEUTICAL CALCULATIONS, LESSON FOUR, CONTINUED
PERCENTAGE SOLUTIONS

VOLUME IN VOLUME

Liquids are usually measured by volume. Percentage strength indicates the number of parts by volume of the active ingredient that are contained in the total volume of the solution considered as 100 parts by volume.

EXAMPLE

How much liquified phenol should be used to make 250 ml of a 2.5% solution?

2.5% ÷ 100 = 0.025 0.025 x 250 ml = 6.25 ml (Answer)

How much pure glycerin is needed to make 1 000 ml of a 0.9% solution?

0.9% ÷ 100 = 0.009 0.009 x 1 000 = 9 ml (Answer)

WEIGHT IN WEIGHT

EXAMPLE

How many mg of hydrocortisone are needed to make 1 000 Gm of a 1/8% ointment?

Change 1/8% to a decimal percentage: 1 ÷ 8 = 0.125%

Change 0.125% to a decimal fraction: 0.125% ÷ 100 = 0.00125

0.00125 x 1 000 = 1.25 Gm (Answer)

How much menthol is needed to make 1% in 250 Gm of an ointment?

1% ÷ 100 = 0.01 0.01 x 250 = 2.5 Gm (Answer)

PHARMACEUTICAL CALCULATIONS, LESSON FIVE, RATIO STRENGTH,

The concentrations of weak solutions are frequently expressed in terms of RATIO STRENGTH. Since percentages are a ratio of parts per hundred, RATIO STRENGTH is another way of expressing percentage.

For solids in liquids: 1:1 000 (read one to one thousand) means 1 Gm of solute in 1 000 ml of solution.

For liquids in liquids: 1:1 000 means 1 ml of solute in 1 000 ml of solution.

For solids in solids: 1:1 000 means 1 Gm active ingredient in 1 000 Gm of mixture.

EXAMPLES

Express 0.02% as a ratio strength.

$0.02\% = \frac{0.02}{100}$ set up a proportion $\frac{0.02}{100} = \frac{1}{X}$

$0.02X = 0.02X$

$1 \times 100 = 100$

$0.02X = 100$

$X = 100 \div 0.02$

$X = 5000$

Answer = 1:5000

Express 1:4 000 as a percentage strength.

$\frac{1}{4000} = \frac{X}{100}$

$4000 \times X = 4000X$

$100 \times 1 = 100$

$4000X = 100$

$X = 100 \div 4000$

$X = 0.025$ PARTS PER HUNDRED OR 0.025%

Express 250 mg/500 ml as a ratio strength.

250 mg = 0.25 GM

Set up a proportion $\frac{0.25}{500} = \frac{1}{X}$

$0.25X = 500$

$X = 500 \div 0.25$

$X = 2000$

Answer = 1:2000

Express 1:1 000 as a percentage strength.

$\frac{1}{1000} = \frac{X}{100}$

$1X100 = 100$

$1000 \times X = 1000X$

$1000X = 100$

$X = 100 \div 1000$

$X = 0.1$ parts per hundred or 0.1%

CHATTANOOGA STATE TECHNICAL COMMUNITY COLLEGE
Chattanooga, Tennessee
Nursing Department

PHARMACOLOGY

INDEPENDENT STUDY: DOSAGES AND SOLUTIONS---A PROGRAMMED PRESENTATION

Week	Topic	Assignment
5	Introduction to Metric System	Read: pg 1-14 Memorize: a. Metric Equivalencies, pg 14 b. Abbreviations, pg 3 Work Problems: pg 15-16 Enrichment: Kozier & Erb, pg 949-950
6	Calculation of Fractional Dosage	Read: pg 18-25 Work Problems: pg 26-28 Enrichment: Kozier & Erb, pg 950-951
7	Apothecaries System	Read: pg 30-35 Memorize: Equivalencies, pg. 36 Work Problems: pg 37 Enrichment: Kozier & Erb, pg 948
8	Conversion of Approximate Equivalents	Read: pg 39-47 Memorize: Conversion Equivalents, pg 48 Work Problems: pg 49-50 Enrichment: Kozier & Erb, pg 948-949
9	Household Measures	Read: pg 52-56 Memorize: Household equivalents, pg 57 Work Problems: pg. 58-59 Enrichment: Kozier & Erb, pg 948
	Calculation of IV Flow Rates	Review: Kozier & Erb, pg 819
10	Practice Test	Work Practice Test (Outside Activity)
11	EXAM: CALCULATION OF DRUGS AND IV FLOW RATES *MUST BE PASSED WITH 95% ACCURACY.	
12	Final Exam	

10-08-84

PARENTERAL

	TRADE NAME	GENERIC NAME	DOSAGE FORMS	USE
1.	Garamycin	Gentamicin	60mg syringe, 80mg syringe, 80mg vial	Antibiotic
2.	Kefzol/Ancef	Cefazolin	500mg vial, 1 Gm vial	Antibiotic
3.	Mandol	Cefamandole	500mg vial, 1 Gm vial, 2 Gm vial	Antibiotic
4.	Mefoxin	Cefoxitin	1 Gm vial, 2 Gm vial	Antibiotic
5.	Nebcin	Tobramycin	60mg syringe, 80mg syringe, 80mg vial	Antibiotic
6.	Omnipen	Ampicillin	250mg vial, 500mg vial, 1 Gm vial	Antibiotic
7.	Phenergan	Promethazine	25mg amp ALSO: 12.5mg, 25mg tabs; 12.5mg. 25mg, 50mg supp.	Antihistamine
8.	Cleocin	Clindamycin	300mg amps, 600mg amps	Antibiotic
9.	Heparin	Heparin	Flush (100units), 1,000units-20,000units	Anticoagulant
10.	Aminophylline	Aminophylline	250mg amps, 500mg amps	Bronchodilator

ORAL

	TRADE NAME	GENERIC NAME	DOSAGE FORMS	USE
1.	Anspor/Velosef	Cephradine	250mg caps, 500mg caps, 125mg/5ml susp., 250mg/5ml susp.	Antibiotic
2.	Ecotrin	Enteric Coated Aspirin	5gr. tablet	Analgesic
3.	Deltasone	Prednisone	2.5mg tabs, 5mg tabs, 10mg tabs, 20mg tabs, 50mg tabs	Steroid
4.	Colace	Dioctyl Sodium Sulfosuccinate	50mg caps, 100mg caps, 1% liquid	Fecal (Stool) Softener
5.	Dulcolax	Bisacodyl	5mg tab, 10mg supp.	Laxative
6.	Hydrodiuril Esidrex Oretic	Hydrochlorothiazide	25mg tab, 50mg tab	Diuretic
7.	Kaochlor SF 10% Liquid	Potassium Chloride 10% Sugar Free	Liquid	Potassium Supplement
8.	Keflex	Cephalexin	250mg caps, 500mg caps, 1 Gm caps, 125mg/5ml susp., 250mg/5ml susp.	Antibiotic
9.	Lanoxin	Digoxin	0.125mg tabs, 0.25mg tabs, 0.05mg/cc Elixir, ALSO: 0.5mg/2cc amp, 0.1mg/cc Pediatric amp.	Cardiotonic
10.	Lasix	Furosemide	20mg tabs, 40mg tabs, 80mg tabs, Oral Solution; ALSO: 2ml, 4ml, 10ml amps	Diuretic
11.	Noctec	Chloral Hydrate	500mg/5ml susp., 500mg caps, 250mg caps	Hypnotic
12.	Tylenol w/ Codeine; Phenaphen w/ Codeine	Acetaminophen w/Codeine	Acetaminophen 300mg w/ Codeine 7.5mg, 15mg, 30mg, 60mg tabs/caps; Acetaminophen 120mg w/ Codeine 12mg per 5ml elixir	Analgesic, Antipyretic

	TRADE NAME	GENERIC NAME	DOSAGE FORMS	USE
13.	Principen	Ampicillin	125mg/5ml susp., 250mg/5ml susp., 250mg caps, 500mg caps	Antibiotic
14.	Sorbitrate/ Isordil	Isosorbide Dinatrate	5,10,20mg oral tab; 40mg Sustained Action tab; 2.5mg, 5mg sub-lingual tab; 5, 10mg chewable tab	Vasodilator
15.	Tylenol	Acetaminophen	120mg/5ml elixir; 60mg/0.6ml drops; 325mg tabs, caps; 80mg chewable tabs; 500mg Extra-Strength tabs, caps	Analgesic
16.	Aldomet	Methyldopa	125mg tabs, 250mg tabs, 500mg tabs, 250mg/5ml susp.	Antihypertensive
17.	Dalmane	Flurazepam	15mg caps, 30mg caps	Hypnotic
18.	Darvocet N 100	Propoxyphene Napsylate	100mg propoxyphene/ 650mg acetaminophen tabs	Analgesic
19.	Dilantin	Phenytoin	30mg/5ml susp., 125mg/5ml susp., 50mg Infatabs, 100mg caps, 30mg caps, ALSO: 100mg/2ml syringe	Anticonvulsant
20.	Dialose Plus	Docusate K Casanthranol	100mg Docusate K/ 30mg Casanthranol	Stool Softener, Laxative
21.	Inderal	Propanolol HCl	10mg tabs, 20mg tabs, 40mg tabs, 80mg tabs; ALSO: 1mg/ml amp	Antihypertensive
22.	Restoril	Temazepam	15mg caps, 30mg caps	Hypnotic, Sedative
23.	Surfak	Dioctyl Calcium Sulfosuccinate	50mg caps, 240mg caps	Stool Softener
24.	Tagamet	Cimetadine	200mg tabs, 300mg tabs, 300mg/5ml liquid 300mg/2ml vials	Anti-Ulcer Therapy

	TRADE NAME	GENERIC NAME	DOSAGE FORMS	USE
25.	Valium	Diazepam	2mg tabs, 5mg tabs, 10mg tabs; ALSO: 5mg/ml amps	Anti-anxiety agent
26.	Vistaril	Hydroxyzine	25mg caps, 50mg caps, 100mg caps; 25mg/5ml oral susp.; ALSO: 25mg/ml inj., 50mg/ml inj., 100mg/2ml inj.	Antiemetic/ Tranquilizer
27.	Zomax	Zomepirac Sodium	100mg tabs	Analgesic
28.	Torecan	Thiethylperazine	10mg tabs, 10mg supp., ALSO: 10mg/2cc amp	Antiemetic, Antinauseant
29.	Klotrix	Potassium Chloride	10mEq slow-release tab	Potassium supplement
30.	Indocin	Indomethacin	25mg caps, 50mg caps	Anti-inflammatory

TRADE NAME / GENERIC CROSS REFERENCE

Match the correct number of each trade name with the generic name.

TRADE NAMES	GENERIC NAMES
1. Vibramycin	Bethanecol
2. Aldomet	Cefotaxime
3. Urecholine	Phenytoin
4. Librium	Cloxacillin
5. Valium	Guaifenesin
6. Dynapen	Cefazolin
7. Kafzol	Doxycycline
8. Tegopen	Hydralazine
9. Cardizem	Methyldopa
10. Robitussin	Ketoconazole
11. Claforan	Diazepam
12. Keflin	Hydroxyzine
13. Vistaril	Chlordiazepoxide
14. Nizoral	Cephalothin
15. Dilantin	Diltiazem
16. Apresoline	Doxepin
17. Darvon	Promethazine
18. Decadron	Docusate Sod. w Casanthranol
19. Sinequan	Propoxyphene
20. Phenergan	Cephradine
21. Tagamet	Triamcinolone
22. Colace	Dexamethasone
23. Kenalog	Furosemide
24. Peri Colace	Cimetidine
25. Anspor	Docusate Sodium
26. Lasix	Dicloxicillin

TRADE NAME / GENERIC CROSS REFERENCE cont.

Match the correct number of each trade name with the generic name.

TRADE NAMES	GENERIC NAMES
27. Garamycin	Nitroprusside Sodium
28. Ak Sulf	Bisacodyl
29. Nebcin	Diphenoxolate w Atropine
30. Nipride	Amitriptyline
31. Dulcolax	Niphadepine
32. Isordil	Hydrochlorothiazide
33. Calan	Terbutaline
34. Ticar	Gentamicin
35. Persantine	Tobramycin
36. Mefoxin	Ticarcillin
37. Procardia	Dipyridamole
38. Esidrex	Digoxin
39. Elavil	Methylprednisolone Sodium Succinate
40. Bricanyl	Cefoxitin
41. Lumotil	Hydrocortisone Sodium Succinate
42. Lanoxin	Sodium Sulfacetamide
43. A Methapred	Isosorbide Dinitrate
44. Intropin	Oxytocin
45. A Hydrocort	Dobutamine
46. Pitocin	Verapamil
47. Dobutrex	Beclomethasone Diproprionate
48. Unipen	Dopamine
49. Mandol	Aminocaproic Acid
50. Vancenil	Cefamandole
51. Amicar	Nafcillin
52. Sumycin	Theophylline Timed-Release
53. Theo-Dur	Tetracycline

TRADE NAMES / GENERIC CROSS REFERENCE cont.

Match the correct number of each trade name with the generic name.

TRADE NAMES	GENERIC NAMES
54. Somophyllin	Phenylephrine 2.5%
55. Klotrix	Prednisolone Acetate
56. Sudafed	Lorazepam
57. Flagyl	Propranolol
58. Oncovin	Metronidazole
59. Inderal	Chloral Hydrate
60. Noctec	Clindamycin
61. Cleocin	Phenylephrine 10%.
62. Platinol	Proparacaine 0.5%
63. Hemavitamin	Vincristine
64. Ativan	Cisplatin
65. Ak Dilate Ophth. Sol.	Aminophylline
66. Ak Tate Ophth Sol.	Potassium Chloride Sustained Release
67. Ak Dilate Forte Ophth. Sol.	Pseudoephedrine
68. Ak Taine Ophth. Sol.	Multi-Vitamin
69. A.S.A. Supp.	Acetaminophen
70. A.P.A.P. Supp.	Aspirin

CHATTANOOGA STATE TECHNICAL COMMUNITY COLLEGE
Chattanooga, Tennessee
Nursing Department

MATH PRACTICE QUIZ

1. 1 L = _____ ml
2. 1 mg = _____ mcg
3. 1000 mg = _____ gm
4. 1 Kg = _____ lbs
5. 1 pt = _____ ounces = _____ ml
6. 1 qt = _____ pts = _____ ml
7. 4 qts = _____ gal = _____ ml
8. 4 tsp = _____ Tbsp
9. 1 Tbsp = _____ ml = _____ ℥
10. ℥ is the symbol for _____.
    1℥ = _____ ml = _____ t
11. ℨ is the symbol for _____
12. 1ℨ = _____ cc
13. _____ ml = ℨ iss
14. 1 t = _____ ℥ = _____ ml
15. 15 gtts = _____ ♏ = _____ ml (or cc)
16. 1 T = _____ ml
17. 4 T = _____ ml
18. 3 pt = _____ cc
19. 5 qt = _____ cc
20. 3 pts = _____ qt(s)
21. 8 qts = _____ gallon(s)
22. 2 gal = _____ ml
23. 1 lb = _____ Kg
24. 1 gr = _____ mg
25. 1/60 gr = _____ mg
    1/2 gr = _____ mg
    1/8 gr = _____ mg
    1/6 gr = _____ mg
    1/4 gr = _____ mg
26. 1 cc = ___ ml = _____ ♏
27. 2 ℥ = ___ ml = ___t
28. 1 ♏ = _____ gt
29. gr iv = _____ mg
30. ℨ ss = _____ cc
31. ℨ i = _____ ml
32. gr v ss = _____ mg
33. ℨ iii = _____ ml
34. 180 lbs = _____ kg
35. 1 inch = _____ cm
36. 8 inches = _____ cm
37. 15 cm = _____ inches
38. .5 Gm = _____ mg
39. .005 Gm = _____ mg
40. 1.5 Gm = _____ mg
41. 200 mg = _____ Gm
42. 50 mg = _____ Gm
43. 1500 mg = _____ Gm
44. 2 gr = _____ mg
45. ss gr = _____ mg
46. 0.6 mg = _____ gr
47. 45 mg = _____ gr

48. Order is written for 1 Gm Gantrisin Tablets q.i.d., you have on hand 500mg tablets. How many tablets per dose should be given? _____

49. EES drops on hand. Label reads 100 mg/2.5 ml, 1 dropperful = 2.5 ml. The order is for 50 mg q.i.d. pO. How much EES do you give? _____

50. On hand Atropine Injection Ampuls 0.4 mg/1/2ml. The order reads 0.6 mg IM for preop, how much Atropine do you give?_____

51. On hand, Garamycin Injection 40 mg/ml in a 2 ml vial. How much do you give for a 75 mg dose? _____

52. Dilantin 100 mg/2ml on hand. Order is for 0.5 Gm IV stat; how much do you give? _____

53. On hand is Magnesium Sulfate Injection for IV use; label reads 8 meQ per 2 ml. Order is for 20 meQ IV. How much do you give?_____

54. Order is for Ampicillin 3.5 Gm orally in one dose. On hand are 500 mg capsules. How many capsules do you give?_____

55. On hand, Heparin 10,000/2 ml. Order is for 7500 U. How much do you give? _____

56. The doctor had ordered Morphine 1/6 gr IM q 4 hr. How many mg is this?_____

57. The order is for D_5W 1000ml to run in over 8 hours. The drip factor is 15 gtts/cc. How many cc should the pt get per hour?_____

58. In #57, at how many drops per minute, should the IV run? _____

59. You have 15 mg/ml of Morphine Sulfate available. The order is for 10 mg to be given. How much of the solution should you administer?_____

60. You are to give Penicillin 400,000U. The label reads Penicillin 300,000U/per ml. How many ml should you give?_____

61. Drug order: Morphine 1/4 gr q4hr prn IM. Available 20 cc vial of Morphine 10 mg/ml. How much Morphine should be given per dose?_____

62. You are to give Maalox 15 ml, q2hr. If you have a 16 oz bottle, how many doses will the bottle contain?_____

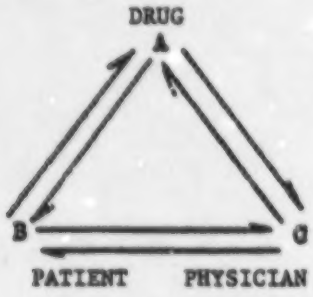
MATH PRACTICE QUIZ ANSWERS

1. 1000
2. 1000
3. 1
4. 2.2
5. 16 = 500
6. 2 = 1000
7. 1 = 4000
8. 1
9. 15 = 1/2
10. dram, 4 ml = 1 t
11. ounce
12. 30
13. 45
14. 1 = 4
15. 15 = 1
16. 15
17. 60
18. 1500
19. 5000
20. 1 1/2
21. 2
22. 8000
23. 2.2
24. 60
25. 1 30 8 10 15
26. 1 = 15
27. 8 = 2
28. 1
29. 120
30. 15
31. 30
32. 330
33. 90
34. 81.8
35. 2.5
36. 20
37. 6
38. 500
39. 5
40. 1500
41. .2
42. .05
43. 1.5
44. 120
45. 90
46. .01
47. .75
48. 2
49. 1.25 ml (1/2 dropperful)
50. 0.75 ml or 11 minims
51. 1.9 ml
52. 10 ml
53. 5 ml
54. 7
55. 1.5 ml
56. 10 mg
57. 125
58. 31
59. 10 minims
60. 0.75
61. 1.5 ml
62. 32

CHATTANOOGA STATE TECHNICAL COMMUNITY COLLEGE
Chattanooga, Tennessee
Nursing Department

NS 211

According to the noted pharmacologist Louis S. Goodman, the problem of drug efficacy can be viewed as composed of the amazingly intricate interaction of three (3) major components---the drug---the patient---and the physician. Each component of the triangle interacts with the other two components, as shown by the interconnecting arrows:



"THE ABC OF DRUG EFFICACY"

A. DRUG FACTORS

Doses Employed
Multiple Effects
Absorption
Distribution
Metabolic Fate
Excretion
Duration of Effect
Route, duration of administration
Habituation
Addiction Liability
Tolerance
Side-Effects
Toxicity
Idiosyncrasy, hypersensitivity
Margin of Safety
Precautions
Contraindications
Pharmaceutical Properties
Chemical Properties
Drug Interactions

B. PATIENT FACTORS

Sex, Age
Body Size and weight
Pregnancy
Pharmacogonetic factors
Biochemical Status
Nutritional Status
Drug metabolism
Disease
Idiosyncrasy, hypersensitivity
contraindications, precautions
Toxicity
Margin of safety
Concomitant therapy
Personality factors
Attitude toward disease, drugs, doctors
Cost

C. PHYSICIAN FACTORS

Training
Diagnostic skill
Therapeutic skill
Experience with drugs
Attitude toward drug therapy
Attitude toward patient
Attitude toward disease
Concomitant therapy

8-28-84

CHATTANOOGA STATE TECHNICAL COMMUNITY COLLEGE
Chattanooga, Tennessee
Nursing Department

PHARMACOLOGY

EQUIVALENTS

COMPARISONS

Dry	Liquid
1000 GM = 1 kilogram = 2.2 lbs.	1000 cc = 1000 ml. = 1 qt = 1L = 2 pts = 4 gl. = 32 oz.
	500 cc = 500 ml. = ½ qt. = ½L = 1 pt = 2 gl. = 16 oz.
	250 cc = 250 ml. = ¼ pt. = 1 glass = 8 oz.
	180 cc = 180 ml. = 1 cup = 6 oz.
30 Gm. = 1 oz. = 8 dr.	30 cc = 30 ml. = 1 oz. = 8 dr. = 6 tsp = 2 tbsp.
15 GM. = ½ oz. = 4 dr.	15 cc = 15 ml. = ½ oz. = 4 dr. = 4 tsp = 1 tbsp.
4 Gms. = 60 gr. = 1 dr.	4 cc = 4 ml. = 60 m. = 60 gtts. = 1 dr.
1 Gm. = 15 gr. = 1000 mg.	1 cc. = 1 ml. = 15 min. = 15 gtts.
½ Gm. = 7 ½ gr. = 500 mg.	
1/10 = 1½ gr. = 100 mg.	
1 gr. = 60 mg.	
½ gr. = 30 mg.	
¼ gr. = 15 mg.	
1/60 gr. = 1 mg.	

Dry	Liquid
1 mg = 1/60 gr	1000 ml or 1000 cc = 1 qt or 1 L or 2 pt.
60 mg = 1 gr	500 ml or 500 cc = 1 pt or 16 oz. = 2 glasses
30 mg = ½ gr.	Approx. 250 ml or 240 ml = 1 glass
15 mg = ¼ gr.	30 ml or 30 cc = 1 oz = 2 tbsp. = 8 drams
1 Gm = 15 gr.	15 ml or 15 cc = 4 dr. = 3 tsp = ½ oz. = 1 tbsp
1 Gm = 1000 mg = 15 gr.	8 ml or 8 cc = 2 dr. = 2 tsp
½ Gm = 500 mg = 7½ gr.	4 ml or 4 cc = 1 dr = 60 M. = 60 gtts. (Approx.)
	1 ml or 1 cc = 15 mx or 16 M
	1 mx = 1 gtts (approx.)

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1000 Gm. = 1 kilogram = 2.2 lb	1000 cc = 1000 ml. = 1 qt. = 1 L - 2 pts.
30 Gm. = 1 oz. = 8 dr.	30 cc = 30 ml. = 1 oz. = 8 dr. = 6 tsp = 2 tbsp.
15 Gm. = ½ oz. = 4 dr.	15 cc = 15 ml = ½ oz. = 4 dr. = 3 tsp. = 1 tbsp.
4 Gm. = 60 gr. = 1 dr.	4 cc = 4 ml. = 60 min. = 60 gtts = 1 dr.

Gr = 1 oz
8 dr = 1 oz
480 gr = 1 oz

ERIC CLEARINGHOUSE
FOR JUNIOR COLLEGES
OCT 1 8 1985